

AMENDMENTS TO THE CLAIMS

Please cancel Claims 1, 14-27 and 29.

Please amend Claims 2-3, 5, 8-10, 12 and 28 as follows.

1. (Cancelled).
2. (Currently Amended) The magneto-resistive memory cell of Claim ~~[[1]]~~4, wherein the pinned magnetic layer and additional pinned magnetic layer have preselected thicknesses such that a magnitude of a magnetic field of the pinned magnetic layer is substantially equal and substantially opposite to a magnitude of an additional magnetic field of the additional pinned magnetic layer.
3. (Currently Amended) The magneto-resistive memory cell of Claim ~~[[1]]~~4, wherein a first magnitude of an applied magnetic field for switching the magnetization orientation of the free magnetic layer in a first direction is about 75-125 percent of a second magnitude of an applied magnetic field for switching the magnetization orientation of the free magnetic layer in a direction substantially opposite to the first direction.
4. (Previously Presented) A magneto-resistive memory cell, comprising:
 - a free magnetic layer;
 - a non-magnetic interlayer, wherein the non-magnetic interlayer comprises a conductor and is in contact with the free magnetic layer;
 - a pinned magnetic layer, wherein the pinned magnetic layer is in contact with the non-magnetic interlayer; and
 - an additional pinned magnetic layer, wherein the pinned magnetic layer is between the free magnetic layer and the additional pinned magnetic layer and wherein a magnetization orientation of the pinned magnetic layer is substantially anti-parallel to a magnetization orientation of the additional pinned magnetic layer such that a magnitude of a net magnetic field from the pinned magnetic layer and the additional pinned magnetic layer is too small to substantially affect a magnetization orientation of the free magnetic layer, wherein the pinned magnetic layer and additional pinned magnetic layer have preselected thicknesses such that a magnitude of a magnetic field of the pinned magnetic layer is substantially equal and substantially opposite to a magnitude of an additional magnetic field of the additional pinned magnetic layer, wherein a magneto-

resistive material comprising the pinned magnetic layer is different from a magneto-resistive material comprising the additional pinned magnetic layer.

5. (Currently Amended) The magneto-resistive memory cell of Claim [[1]]4, wherein the additional pinned magnetic layer comprises a ferromagnetic material with magnetization orientation pinned by an adjacent layer.

6. (Original) The magneto-resistive memory cell of Claim 5, wherein the adjacent layer comprises an antiferromagnetic material.

7. (Original) The magneto-resistive memory cell of Claim 5, wherein the adjacent layer comprises a permanent magnet material.

8. (Currently Amended) The magneto-resistive memory cell of Claim [[1]]4, wherein the pinned magnetic layer comprises a permanent magnet.

9. (Currently Amended) The magneto-resistive memory cell of Claim [[1]]4, wherein the additional pinned magnetic layer comprises a ferromagnetic material with coercivity sufficiently high such that its magnetization orientation remains fixed in the presence of an applied magnetic field of a magnitude sufficient to switch the magnetization orientation of the free magnetic layer.

10. (Currently Amended) The magneto-resistive memory cell of Claim [[1]]4, wherein the pinned magnetic layer and the additional pinned magnetic layer are separated by a separating layer.

11. (Original) The magneto-resistive memory cell of Claim 10, wherein the separating layer is ruthenium.

12. (Currently Amended) The magneto-resistive memory cell of Claim [[1]]4, wherein the nonmagnetic interlayer comprises copper.

13. (Original) The magneto-resistive memory cell of Claim 12, formed within a giant magneto-resistive (GMR) memory array.

14-27. (Cancelled).

28. (Currently Amended) The method of Claim [[25]]30, wherein the first magnetic layer and the second magnetic layer have substantially the same thickness.

29. (Cancelled).

30. (Previously Presented) A method of constructing a magneto-resistive memory cell, comprising:

forming a first magnetic layer;

forming a non-magnetic interlayer, wherein the non-magnetic interlayer comprises a conductor;

forming a second magnetic layer without forming another magnetic layer between the first magnetic layer and the second magnetic layer;

forming a first fixed magnetic layer by applying a first magnetic field to fix a magnetization orientation of the first magnetic layer; and

forming a second fixed magnetic layer by applying a second magnetic field to fix a magnetization orientation of the second magnetic layer in an opposite direction from the magnetization orientation of the first magnetic layer, wherein a set of ferromagnetic and antiferromagnetic coupling fields of the second fixed magnetic layer balance an additional set of ferromagnetic and antiferromagnetic coupling fields from the first fixed magnetic layer;

wherein a magnetic material used in forming the first fixed magnetic layer is different from a magnetic material used in forming the second fixed magnetic layer.

31. (Original) The method of Claim 30, wherein the first magnetic layer and the second magnetic layer are formed sequentially.

32. (Original) The method of Claim 31, wherein the conductor comprises copper.